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V. *Account of Dr. Knight's Method of making artificial Loadstones. By Mr. Benjamin Wilson, F. R. S.*

TO JOSEPH BANKS, ESQ. P. R. S.

S I R,

Read Dec. 17, 1778. **T**HE method of making artificial loadstones, as it was discovered and practiced by the late Dr. GOWIN KNIGHT, being unknown to the public; and I myself having been frequently present when the doctor was employed in the most material steps of that curious process, I thought a communication thereof would be agreeable to you and the philosophic world.

The method was this: having provided himself with a large quantity of clean filings of iron, he put them into a large tub that was more than one-third filled with clean water: he then, with great labour, worked the tub to and fro for many hours together, that the friction between the grains of iron by this treatment might break off such

smaller parts as would remain suspended in the water for a time. The obtaining of those very small particles in sufficient quantity seemed to him to be one of the principal *desiderata* in the experiment.

The water being by this treatment rendered very muddy, he poured the same into a clean earthen vessel, leaving the filings behind; and when the water had stood long enough to become clear, he poured it out carefully, without disturbing such of the iron sediment as still remained, which now appeared reduced almost to impalpable powder. This powder was afterwards removed into another vessel, in order to dry it; but as he had not obtained a proper quantity thereof, by this one step he was obliged to repeat the process many times.

Having at last procured enough of this very fine powder, the next thing to be done was to make a paste of it, and that with some vehicle which would contain a considerable quantity of the phlogistic principle; for this purpose he had recourse to linseed oil in preference to all other fluids.

With these two ingredients only he made a stiff paste, and took particular care to knead it well before he moulded it into convenient shapes. Sometimes, whilst the paste continued in its soft state, he would put the
impression

impreſſion of a ſeal upon the ſeveral piéces; one of which is in the Britiſh Muſeum.

This paſte was then put upon wood, and ſometimes on tiles, in order to bake or dry it before a moderate fire, at a foot diſtance or thereabouts.

The doctor found, that a moderate fire was moſt proper, becauſe a greater degree of heat made the compoſition frequently crack in many places.

The time required for the baking or drying of this paſte was generally five or ſix hours before it attained a ſufficient degree of hardneſs. When that was done, and the ſeveral baked pieces were become cold, he gave them their magnetic virtue in any direction he pleaſed, by placing them between the extreme ends of his large magazine of artificial magnets for a few ſeconds or more, as he ſaw occaſion.

By this method the virtue they acquired was ſuch, that when any one of thoſe pieces was held between two of his beſt ten guinea bars, with its poles purpoſely inverted, it immediately of itſelf turned about to recover its natural direction, which the force of thoſe very powerful bars was not ſufficient to counteract.

I am, &c.

